



Special bearings for planetary

Bonfiglioli was facing a severe challenge in trying to increase the performances of their planetary travel drive 700C series, limiting at the same time the dimensions and not being badly affected on the costs. The solution?

A special full-complement double-row cylindrical roller bearing developed by CPM.

✉ Andrew Bones



In order to increase the performances of their planetary travel drive 700C series, Bonfiglioli has chosen CPM as a reference partner in the global special bearings scenario.

Since 1956 Bonfiglioli has been designing and developing innovative and reliable power transmission and control solutions for industry, mobile machinery and renewable energy applications, globally. They promote sustainable and shared development around the world by providing dynamic, responsible, prompt and customer-centred products and services. The development of effective, tailored solutions for a wide range of applications is a fundamental aspect of Bonfiglioli's job. They succeed in this because

they closely co-operate with customers, listen to requests and work with them to improve their own performance. The very same happens with their partners and providers. Bonfiglioli works to the strictest standards of quality and safety, as certified by seven different international institutes. The products they manufacture – that use CPM special bearings – are intended for a wide range of industrial fields of application as earthmoving machines, road construction and maintenance machines, generic construction machines, lifting and internal

transports, drilling machines, foundations and ground stabilization, agricultural and forest machines, as well as yaw and pitch drives for wind turbine generators for renewable energy systems. Bonfiglioli's customers range from top international OEMs to local operators.

The challenge: criticality in lubrication

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gears



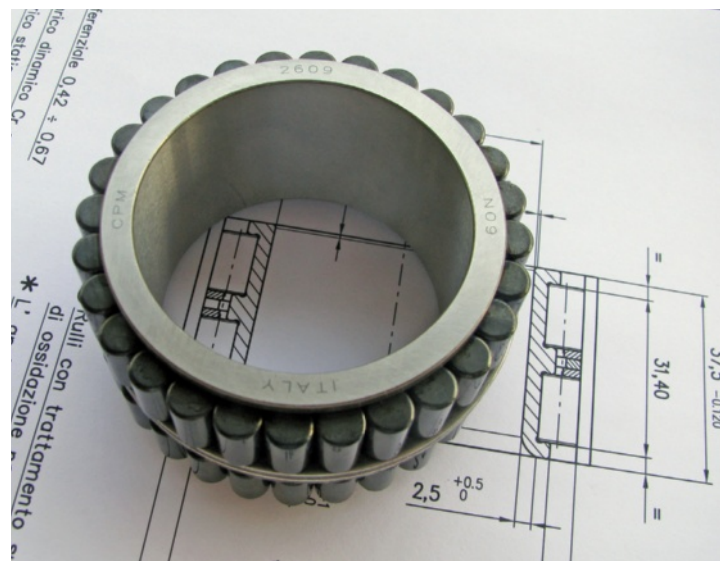
mensions and not being badly affected on the costs. During an endurance test made in according to Product Development Process, the bearings assembled on the planetary gears of one of these proto unit failed prematurely. The severe working conditions of Bonfiglioli's high-end planetary gearbox led standard production bearings to a fast breakdown. The problem was caused by a criticality in lubrication: due to high loads and low speed of rotation, the elastohydrodynamic effect between lubricant and rolling surface was not effective.



Giovanni Zinzani, Mobile & Wind Solutions, Product Development Director in Bonfiglioli (Calderara di Reno, Bologna, Italy).

The solution: a special cylindrical roller bearing

The special bearing designed and customised by CPM had then to solve the early wear and tear problem on the raceways of the internal ring and on the rollers. The creep was generated by sudden changes in the direction of rotation of the bearing. CPM focused on the cylindrical rollers, that had been treated with a special black oxide surface treatment. This treatment covers the rollers with a 0.2 microns coating, then providing a hardness higher than normal steel and offering an improved fluency thanks to the very low, almost non-existing surface roughness. Thanks to this treatment, the wear and tear generated by the creep between rollers (caused by the absence of a spacing-cage) and the creep between rollers and raceways, was strongly and definitely reduced. Reduction of the drag coefficient, thanks to this special coating, enabled the bearing to reach the attended working time, even in extremely heavy working conditions. The CPM 2609 is a special full-complement double-row cylindrical roller bearing able to increase the performances of Bonfiglioli planetary travel



Technical data of the solution

CPM solution

- Bearing – part number 2609

Key components

- Cylindrical roller bearing
- Steel100 Cr6
- Internal Diameter 50
- External Diameter 69.67
- Width 37.5
- Cr 111.2 kN
- Cor 186.9 kN

Key benefits

- Lifetime increase
- Wear decrease
- Improved performance in lubricant
- leakage conditions

drives 700C and 700CK series. This solution is embedded in:

- construction machines, for example in crawler excavators;
- agricultural machines, such as sprayers and sugar cane harvesters.

«CPM is a serious and reliable partner in terms of flexibility and capability to develop new bearings upon specific needs. Continuity in the supply process for series production and the high quality of its products make CPM a reference partner in the global special bearings scenario», says Giovanni Zinzani, Mobile & Wind Solutions, Product Development Director in Bonfiglioli (Calderara di Reno, Bologna, Italy).

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